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Applicant(s): LG Electronics Inc.

COMMISSIONER

[ABSTRACT OF DISCLOSURE]**[ABSRTACT]**

The present invention relates to a method for calculating audience rating using an interactive TV, through which a broadcasting company can calculate the audience rating of a certain content per section by extracting a user's attractiveness to a designed section based on a consumption behavior record information written in a user history recorder inside of the interactive TV. The method comprises steps of: recording information on the user's action on the content and the user consumption history record of the contents' ID after inputting the contents provided by a broadcasting company; transferring the user record information to the content provider every designated cycle; and calculating the user's audience rating on each section in the designated content based on the analysis on the consumption behavior record information. So, the broadcasting company can provide user-oriented services effectively by receiving the user record information in the user history recorder of the interactive TV.

[REPRESENTATIVE DRAWING/ TYPICAL DRAWINGS]

FIG.1A and 1B

[INDEX WORDS]

Interactive TV, User history recorder, audience rating

[SPECIFICATION]

[TITLE OF THE INVENTION]

METHOD FOR CALCULATING PROGRAM RATING USING AN INTERACTIVE TV

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1A and FIG. 1B are flow charts showing a method for calculating audience rating using the interactive TV in accordance with the present invention;

FIG. 2 is a structural diagram showing a user history recorder inside of the interactive TV in accordance with the present invention; and

FIG. 3 diagrammatically shows a structure of the user history recorder shown in FIG. 2 based on Extensible Markup Language (XML).

[DETAILED DESCRIPTION OF THE INVENTION]

[OBJECT OF THE INVENTION]

[FIELD OF THE INVENTION AND BACKGROUND OF THE RELATED ART]

The present invention relates to an apparatus and a method for calculating audience rating, in particular, to an apparatus and a method for calculating audience rating using an interactive TV.

Recently, more people are using multimedia, and the industries concerned are willing to provide the user-oriented services to meet the user's needs. Among others,

the service that is able to do self-observation of the user's consumption pattern to reflect his or her attractiveness has been drawing a lot of attention.

When a related art technique provides the help files, it provides an appropriate user interface to every user, taking advantage of his or her history that shows the favorite items of the user. In other words, comparing the help with a tree, although the original level might be below or at the bottom, the user's favorite part can be put in a high level. In this way, the user can find his or her favorite part faster.

Ever since the digital broadcasting was introduced, there has not been any time when additional functions in the broadcasting became a key factor in the broadcasting itself until now. For instance, a method for searching and displaying multimedia was suggested in which the information about the user's preference was extracted based on the user's consumption history information.

Subsequently, there is provided a more intelligent display method that records the user's display action, such as replay or fast forward, and later describes a user's attractiveness score according to the data segment. In other words, if the user tends to use the replay function more than any others, it is considered as a more important

segment, and during the search, it enables a slow display function as well.

And, there is provided a method for providing a suitable environment for each user by recording device information, such as the user's favorite channel, the user's favorite sound magnitude on each channel and so on.

Also, there is disclosed a method providing a program guide based on the user's favorite program genres, instead of transmitting a vast amount of program guide as it is. The user's attractiveness on a certain genre can be figured out by recording the user's ordinary viewing data and extracting his or her habit out of the record.

The above functions are accomplished by the user's multimedia viewing history. Namely, the information about the user's preference was extracted by recording the user's multimedia data consumption, the pattern or habits using figures.

[TECHNICAL SOLUTION OF THE INVENTION]

However, the information provided by the traditional method for calculating the audience rating to the broadcasting company was no more than the data (i.e. contents) based on the consumption history information only, or the position information on the user's favorite contents. Namely, without other information about the user's contents

consumption method, i.e., the Meta information on the corresponding contents, it is very hard to calculate the audience rating on certain content more efficiently.

Therefore, the present invention is devised to solve the above problems, and an object of the present invention is to provide a method for calculating audience rating using an interactive TV, through which a broadcasting company can calculate the audience rating of a certain content per section by extracting a user's attractiveness to a designated section based on a consumption behavior record information written in a user history recorder inside of the interactive TV.

[SYSTEM AND OPERATION OF THE INVENTION]

To achieve the above object, there is provided a method for calculating audience rating using an interactive TV, through which a broadcasting company can calculate the audience rating of a certain content per section by extracting a user's attractiveness to a designed section based on a consumption behavior record information written in a user history recorder inside of the interactive TV. The method comprises steps of: storing information on the user's action on the content and the user record information after inputting the contents provided by a broadcasting company and the user history record of the

contents' ID; transferring the user record information to the content provider every designated cycle; and calculating the user's audience rating on each section in the designated content based on the analysis on the user record information.

A preferred embodiment of the present invention will now be described with reference to the accompanying drawings.

FIG. 1A and FIG. 1B are flow charts showing a method for calculating audience rating using the interactive TV in accordance with the present invention; FIG. 2 is a structural diagram showing a user history recorder inside of the interactive TV in accordance with the present invention; and FIG. 3 is a diagram showing a structure of the user history recorder shown in FIG. 2 based on Extensible Markup Language (XML)

And, referring to FIG.1A and FIG.1B, the method for calculating audience rating using an interactive TV will be explained as follows.

Here, the step (S100) of receiving the contents transmitted from the broadcasting company on the interactive TV (not shown) and storing user's action and its contents ID on the contents will be explained as follows.

First of all, the interactive TV receives the designated content from the broadcasting company (s101).

Then, it is decided whether the user generates a designated action on the received content (s102).

In other words, it is decided whether the user takes the action he or she wants on the received content.

In result of the decision (s102), if there is the designated action on the received content by the user, the content's ID with the corresponding action and the consumption behavior record information about the action are recorded in the consumption behavior recorder 120 of the user history recorder 103 inside of the interactive TV (s103).

The consumption behavior recorder 120 comprises at least one of 'normal finish record' for recording the frequency the a user watches the content from beginning to the end, 'skimmed record' for recording the section occurred the skimmed action on the above contents, 'skipped record' for recording the section occurred the skipped action, 'replay record' for recording the section occurred replay action, 'slowed record' for recording for recording the section occurred slowed action, or 'stopped record' for recording the section occurred stopped action.

The user may take any action out of the consumption

behaviors, for example, 'normal finish', 'skimmed', 'skipped', 'replay', 'slowed', or 'stopped'. If the user takes any one of the listed actions, the information of the corresponding consumption behavior is recorded in the consumption behavior recorder 120.

The normal finish behavior is flag information indicating whether the user watched content from the beginning to the end at a normal speed. And, if the normal finish action is generated on the content, 1 or a true value is recorded in the normal finish record area 120a of the consumption behavior recorder 120.

The skimmed behavior indicates the information that is generated when the user takes the skimmed action during watching content. Once the skimmed action is generated on the content, the section information of the content with the corresponding action is recorded in the skimmed record area 120b of the consumption behavior recorder 120.

The skipped behavior indicates the information that is generated when the user takes the skipped action during watching content, a new section the user actually has not watched appears. When the skipped action is generated on the content, the section information of the content with the corresponding action is recorded in the skipped record area 120c of the consumption behavior recorder 120.

The replay behavior indicates the information that is generated when the user takes rewind action on content, thereby replaying the content several times. When the replay action is generated on the content, the section information of the content with the corresponding action is recorded in the replay record area 120d of the consumption behavior recorder 120.

The slowed behavior indicates the information that is generated when the user takes the slowed action during watching the content at a slower speed than the normal. When the slowed action is generated on the content, the section information of the content with the corresponding action is recorded in the slowed record area 120e of the consumption behavior recorder 120.

Finally, the stopped behavior indicates the information that is generated when the user takes the stopped action in the middle of the content, without finishing the content to the end. When the stopped action is generated on the content, the section information of the content with the corresponding action is recorded in the stopped record area 120f of the consumption behavior recorder 120.

At this point, if the user replays a part after the stopped point from the replay point, the previous stopped

record is automatically deleted. In addition, if the user stops at another different point after the replay, the corresponding stopped point is again recorded. Further, in case that the user watches the corresponding content to the end, it is not regarded as the stopped record, but as the normal finish behavior. In this case, it is recorded in the normal finish record area 120a, and the relevant stopped record is deleted.

Therefore, it is known whether the user already viewed the content or not by looking at the normal finish record area 120a. Moreover, the content's section recorded in the skimmed record area 120b and the skipped record area 120c are regarded as a less interesting section to the user in the relevant content, and can be used for extracting negative attractiveness through the Meta information on the corresponding section.

In addition, the content's section recorded in the replay record area 120d and the slowed record area 120e are regarded an interesting section to the user in the designated content, and can be used for extracting positive attractiveness through the Meta information on the corresponding section.

Here, the user information records are recorded respectively per sections in the consumption behavior

recorder 120 as shown in the table 1 below.

[TABLE 1]

Recording System of Consumption	Consumption Behavior Recorder Frequency
Normal finish record	Flag value (0/1)
Skimmed record	Section start/end or Section start/length
Skipped record	Section start/end or Section start/length
Replay record	Section start/end or Section start/length
Slowed record	Section start/end or Section start/length
Stopped record	Stop point indicator

Here, as shown in table 1, the above normal finish is expressed as 1 or flag having true value when the relevant content is played from start to the end at normal speed. And, the skimmed record, the skipped record, the replay record, and the slowed record are respectively recorded. Whenever any action out of the skimmed, skipped, the reply, and the slowed is taken, the frequency of the corresponding action of the section where the action belongs to increases.

Finally, it is possible to analyze the sections that users are interested in and other sections which users are not interested in using consumption record information respectively recorded on the consumption behavior recorder 120 and so that it is possible to extract user's attractiveness as the audience rating on the corresponding

content.

The stopped record, on the other hand, records the information on the latest stop point, especially when the user stops using the relevant content in the middle, thereby increasing the consumption frequency of the stopped behavior.

In the meantime, as shown in FIG. 2, how the relevant content has been used (or consumed) is recorded in the consumption type recorder 110. In fact, the information on the consumption frequency of the simple view record area 110a, the recording record area 110b, the backup record area 110c, and the transfer record area 110d in the consumption type recorder 110 increases every time of viewing, recording, back-up saving and transferring.

That is, the consumption type recorder 110 and the consumption behavior recorder 120 in the user history recorder have a separate content identifier 110e and 120g or a content reference, in order to manage the information on the consumption type and the consumption behavior that are grouped according to each content.

The content referent used at this point is an identifier (ID) that is independent of a storage point of the content like a Digital Object ID (DOI) or a Content Reference ID of Content ID Forum (CIDF). In this way, it is

accessible to the content any time, and to the Meta information related to the corresponding content. In consequence, even the Meta information not recorded in the user history recorder 100 can be obtained from other external or internal storage, if it is necessary for extracting the user's attractiveness.

At this point, FIG. 3 diagrammatically shows a structure of the user history recorder shown in FIG. 2 based on Extensible Markup Language (XML).

The data transmitter 104 decides whether it is time for a transfer cycle for the consumption type and the consumption behavior record information recorded (S104).

In result of the decision (S104), if it is the transfer cycle for the user record information, all corresponding consumption type and the consumption behavior record information in the user history recorder 103 are transferred to the broadcasting company (S105).

Subsequently, the step (S200) of calculating the user's audience rating on each section in the designated content based on the analysis on the user record information will be explained as follows.

First of all, the broadcasting company receives the designated consumption behavior record information from the interactive TV (S201).

The broadcasting company also decided whether it is time for the analytical cycle of the designated attractiveness (S202).

In result of the decision (S202), if it became the analytical cycle for the designated attractiveness, the first consumption behavior record information out of the consumption behavior record information currently being received is designated as the object consumption behavior record information (S203).

And, the first consumption behavior that is generated in the object consumption behavior record information is initialized as a new action (S204), where the new action is a sort of variable. The analytical varies about the frequency of the action of the detected section of the previous content is initialized (S205).

Next, the ID of the content and the section of the content where the new action is generated are detected, and the frequency of the corresponding action increases in the detected section (S206).

Further, it is decided whether the second action is recorded in the object consumption behavior record information (S207).

In result of the decision (S207), if the second action is duly recorded in the object consumption behavior

record information, the second action recorded in the relevant object consumption behavior record information is designated as a new action (S208). In the previous case, for example, the replay action becomes designated as the new action.

In short, if the next actions, besides the first and the second actions are sequentially recorded in the object consumption behavior record information as aforementioned, the procedures for increasing the frequency of the action in the relevant section is repeatedly conducted.

If any action is taken, by using the section where the corresponding action occurs, ID, and the frequency of the action, and making the analytical table so that it is decided which section of the content is preferable to calculate the audience rating.

Table 2 is an example of the analytical table illustrating the content ID, the frequency of the action (e.g., normal finish, skimmed, skipped, replay etc) generated on the relevant content, and the content's section.

[TABLE 2]

	Content ID =:10899TX	Section 1	Section 2	Section 3	Section 4	Section 5
Section division	1~50	1~13	13~21	2~39	39~45	45~50

Normal finish record	109	109	109	109	70	50
Skimmed record	0	0	0	0	0	0
Skipped record	0	0	0	0	0	0
Replay record	8	1	5	7	3	2

The section division information in the Table indicates to which part of the entire content each section of the relevant content belongs. At this point, the section division information can be relative time information of the content, and the frequency described under the content ID indicates how many times each action is generated against the entire content.

In addition, the section division information can be manifested in the form of frame information or absolute time information.

If the user took the designated action on a single section, it is recorded as if the user's action would have been occurred to the action of the entire content. For example, if the replay action is taken in the section 3 and the section 5, it is recorded that the replay action took place in the action of the entire content.

Therefore, the audience rating on different section of the relevant content can be calculated by drawing out

the analytical table on each content, as shown in FIG. 2.

In the mean time, the analytical table may be written about all the contents or maximized and minimized form instead of not configuring the table like table 2.

In result of the decision (S207), if the second action is not duly recorded in the object consumption behavior record information, it is decided whether the second user information record exists or not among the received information (S209).

In result of the decision (S209), if the second user information record exists among the received information, the above consumption behavior record information is initialized as the object consumption behavior record information (S209) and going back to the step (S204) of that first action is initialized as a new action on the corresponding consumption behavior record information and performing the step.

If there is the second consumption behavior record information among the current received consumption behavior record information, the analysis table of each action on the corresponding consumption behavior record information per section may be written like the above first consumption behavior record information.

As mentioned above, the present invention can provide user-oriented services effectively by extracting the user record information in the user history recorder of the interactive TV.

[EFFECT OF THE INVENTION]

In conclusion, the method for calculating the audience rating using the interactive TV is very advantageous in that the user can get the services he or she wants from the broadcasting company who receives the consumption type and the consumption behavior record information in the user history recorder of the interactive TV, and calculates the user's audience rating on each section in the designated content by analyzing the user record information.

What is claimed is:

1. A method for calculating audience rating using an interactive TV, through which a broadcasting company can calculate the audience rating of certain content per section by extracting a user's attractiveness to a designed section based on the consumption behavior record information written in a user history recorder inside of the interactive TV. The method comprising steps of:

recording information on the user's action on the content and the user record information after receiving the contents provided by a broadcasting company and the user history record of the contents' ID;

transferring the user record information to the content provider every designated cycle; and

calculating the user's audience rating on each section in the designated content based on the analysis on the user record information.

2. The method of of claim 1, wherein the step of calculating audience rating per content's section comprises:

designating a first consumption behavior record information out of the consumption behavior record information currently being received from the interactive

TV as the new action;

initializing the analytical varies about the frequency of the action of the detected section of the previous content;

increasing a frequency of the action of the detected section after detecting a content ID and a section of the content where the new action is generated; and

analyzing the audience rating recorded on the first consumption behavior record information after detecting the ID of the content and the section of the content where the new action is generated, and increasing the frequency of the corresponding action in the detected section.

3. The method of claim 2, further comprising:

deciding whether the second action is recorded among the receiving the user information record if the second action doesn't exist in the object consumption behavior; and

designating the second consumption behavior record information as the object consumption behavior record information if the second user information record exists among the received information.

4. The method of claim 1, wherein the user history

recorder is a portable recorder like smart card.

5. The method of claim 1, wherein the consumption behavior record information includes at least one of:

normal finish record for recording the frequency the a user watches the content from beginning to the end;

skimmed record for recording the section occurred the skimmed action on the above contents;

skipped record for recording the section occurred the skipped action;

replay record for recording the section occurred replay action;

slowed record for recording for recording the section occurred slowed action; and

stopped record for recording the section occurred stopped action.

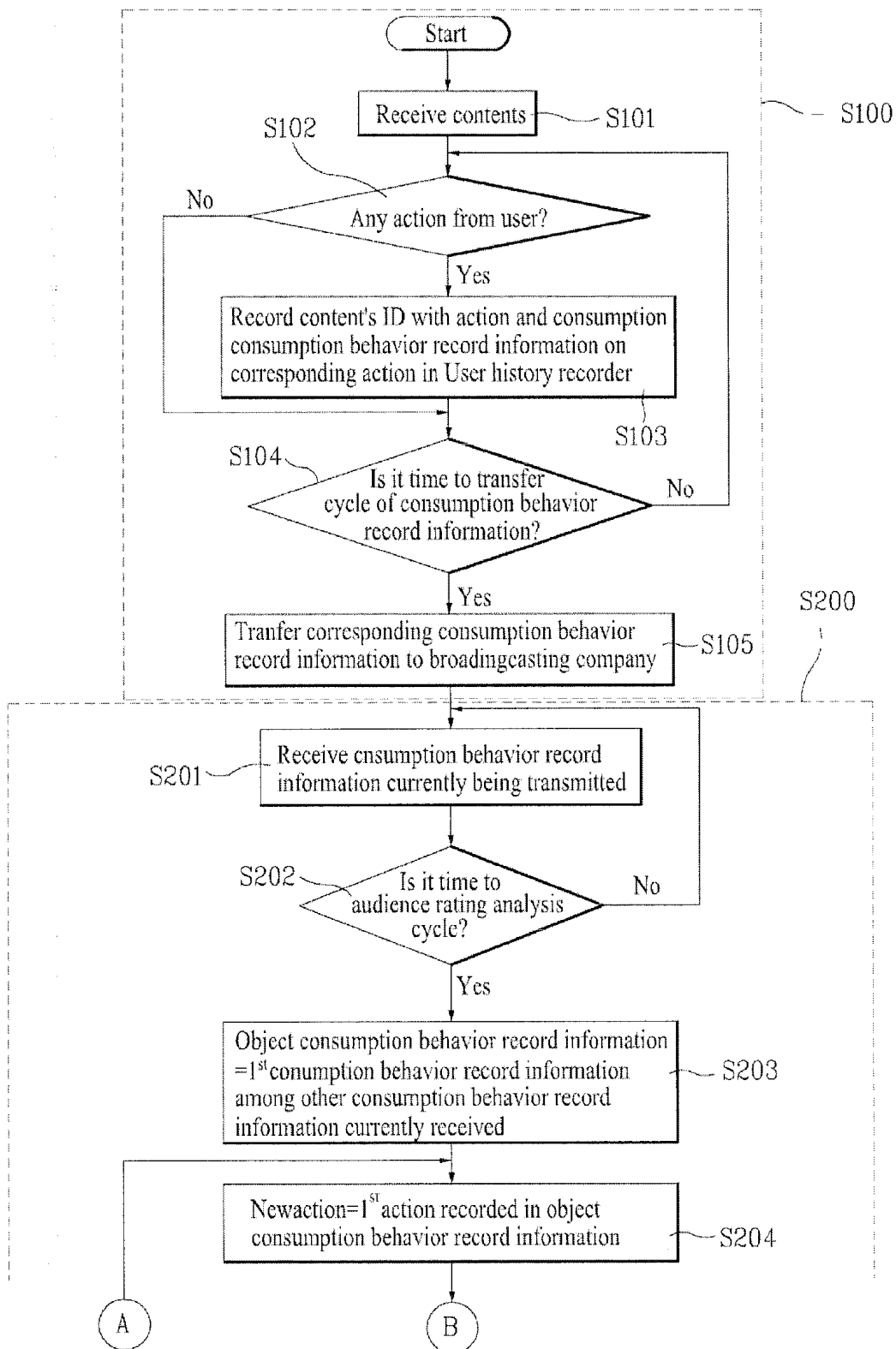
6. The method of claim 5, wherein the previous stopped record is deleted, if the user replays a part after the stopped point from the replay point.

7. The method of claim 5, wherein the stopped record is recorded as the normal finish record in a case that the user watches the corresponding content to the end.

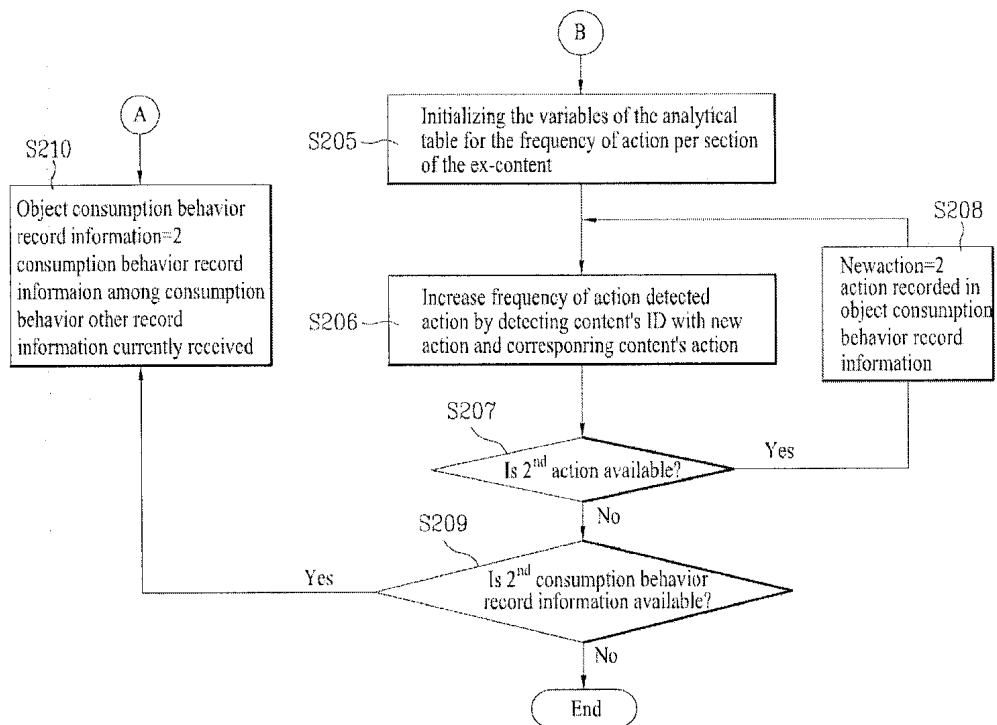
8. The method of claim 5, wherein the skimmed record and the skipped record are a less interesting section to the user in the relevant content.

9. The method of claim 5, wherein the replay record and the slowed record are an interesting section to the user in the designated content.

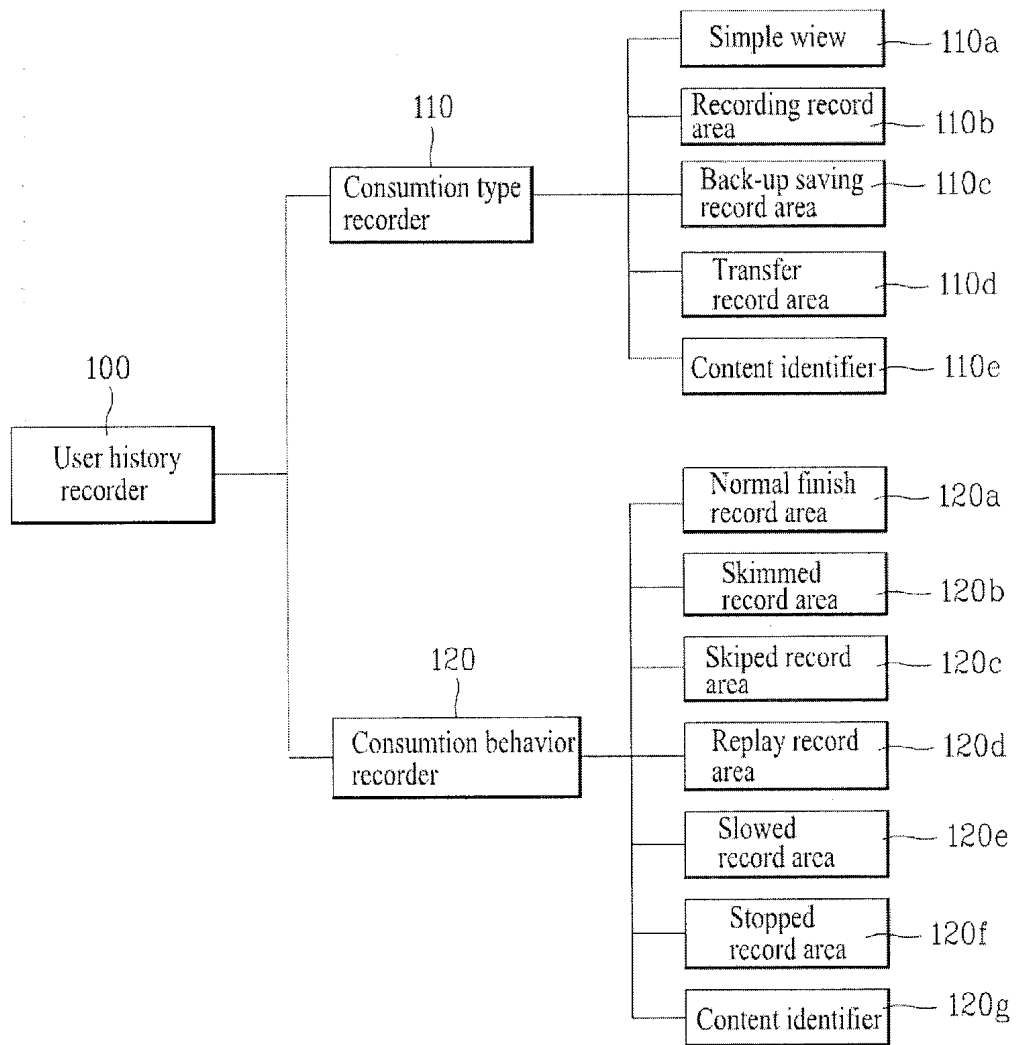
[FIG. 1A]



[FIG. 1B]



[FIG. 2]



[FIG. 3]

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<complexType name="RecordTransferHistory">
  <element name="Actiontime" type="mds:timePoint"
    minOccurs="0"/>
  <element name="Actionformat" type="mds:MediaFormat"
    minOccurs="0"/>
</complexType>
<complexType name="ConsumptionType">
  <element name="SimplyPlayed" type="mds:timePoint"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="Recorded" type="mds:RecordorTransferHistory"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="Backedup" type="mds:RecordorTransferHistory"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="Transferred" type="mds:RecordorTransferHistory"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="ReferenceTopProgram" type="mds:ReferenceTopProgram"
    minOccurs="1" />
</complexType>
<complexType name="COnsumptionBehavior">
  <element name="NormalFinish" type="xml:boolean" minOccurs="0"/>
  <element name="Skimmed" type="mds:MediaTime"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="Skipped" type="mds:MediaTime"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="slowed" type="mds:MediaTime"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="Replayed" type="mds:MediaTime"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="Stopped" type="mds:MediaTimePoint"
    minOccurs="0"/>
  <element name="ReferenceTopProgram" type="mds:ReferenceTopProgram"
    minOccurs="1"/>
</complexType>
<complexType name="UsageHistory">
  <element name="ConsumptionType" type="mds:ConsumptionType"
    minOccurs="0" maxOccurs="unbounded"/>
  <element name="ConsumptionType" type="mds:ConsumptionBehavior"
    minOccurs="0" maxOccurs="unbounded"/>
</complexType>

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CERTIFICATE OF VERIFICATION

I, Gil Jin Young of Patrea Co.,Ltd., 1105 Rm, Yeosam bldg. 648-23, Yeoksam-dong, Ganam-gu, Seoul, Republic of Korea state that the attached document is a true and complete translation to the best of my knowledge of the Korean-English language and that the writings contained in the following pages are correct English translation of the specification and claims of the Korean Patent Application No. 10-2000-0085755.

Dated this 17th day of March, 2008

Signature of translator: Rachel to.

Name: Gil Jin Young